

**Patrick Tchou, M.D.**

**Mitchell v. Taser International**

**September 23, 2013**

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**September 23, 2013**

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1 relate to pacing and electrophysiology, his  
 2 professional work overlaps in a certain area with  
 3 yours?  
 4 A Yes. I believe it was with implantable  
 5 defibrillators that we first interacted.  
 6 Q And is he the kind of friend that you would,  
 7 let's say, if you were in the same place, like a  
 8 Heart Rhythm Society conference, go to dinner  
 9 together if it was convenient with your wives?  
 10 A Yeah.  
 11 Q In fact --  
 12 A If his wife was around and my wife was around  
 13 and we happened to meet at a society meeting, we may  
 14 well say let's go to dinner.  
 15 Q And I asked that for a purpose because Mark  
 16 Kroll said that at the 2005 Heart Rhythm Society  
 17 meeting -- and I'm sure they all run together -- do  
 18 you go to basically every one or try to?  
 19 A I probably missed a few over the last 20 years.  
 20 Q This one was in New Orleans pre-Katrina. Does  
 21 that ring a bell?  
 22 A A lot of them are in New Orleans, unfortunately.  
 23 Q Unfortunately.  
 24 A I can't separate.  
 25 Q He said in a deposition that you and he and your

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1 wives, as you frequently do, all went out to dinner  
 2 together in New Orleans in 2005, and that you told  
 3 him during that dinner that based on your pig  
 4 experiments that you had done under the research  
 5 funded by TASER, that you were getting cardiac  
 6 capture. Do you recall that at all?  
 7 A I don't recall making that statement at a dinner  
 8 to him.  
 9 Q But if he testified to that, would you have any  
 10 reason to doubt that that occurred?  
 11 A That could well have occurred. It's feasible.  
 12 Q Although not in your memory bank anymore, it  
 13 sounds like something that could have happened; is  
 14 that correct?  
 15 A It's possible. I don't recall having dinner  
 16 with his wife in New Orleans.  
 17 Q Now, you did basically --  
 18 A I hope I did not talk about those topics if I  
 19 and my wife were having dinner with him and his wife.  
 20 Q I'm just -- I'm just referring to something that  
 21 he testified to.  
 22 A Okay.  
 23 Q But you agree that you did essentially one  
 24 series of experiments on 13 pigs that resulted in the  
 25 three papers that have been discussed in this

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1 deposition and also in the earlier deposition,  
 2 correct?  
 3 A That's correct. That's correct.  
 4 Q So even though the papers came out in 2006 and  
 5 then subsequently, I think, through the end of 2007,  
 6 all the experiments were done at the same time and we  
 7 struggled a little bit about the date, but you think  
 8 sometime in 2005 would be a good estimate?  
 9 A Yes.  
 10 Q And if it was -- If you had mentioned it to  
 11 Dr. Kroll at the HRS meeting, which was in May, it  
 12 would have been, let's say, in spring or earlier of  
 13 2005?  
 14 A I imagine so. I have no recollection of that  
 15 particular conversation so --  
 16 Q But you did -- as you were getting the results  
 17 from your pig studies, you were, as you testified  
 18 last time in your deposition, keeping the people from  
 19 TASER informed about your results, correct?  
 20 A We had a formal presentation at the end of all  
 21 of these experimentations. There were TASER  
 22 engineers at these experimentations to run some of  
 23 the equipment, so they were informed in that sense.  
 24 But other than that, if there was some informal  
 25 conversations with Mark Kroll, I don't recall any of

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1 those.  
 2 Q But if it was -- since there were TASER people  
 3 at the experiments, do you recall who they were by  
 4 name?  
 5 A No, I don't.  
 6 Q You felt that TASER knew the findings that you  
 7 and Dr. Lakkireddy were obtaining from your pig  
 8 experiments as they were being obtained, correct?  
 9 MR. MALEY: Objection.  
 10 Leading.  
 11 A I don't know that. All I know is at the end we  
 12 did do a formal presentation of all of this data.  
 13 Q Well, we went through this last time, and you  
 14 told Dr. Zipes that from the beginning you were  
 15 telling the people at TASER the results of your  
 16 experiments. Do you recall that?  
 17 MR. MALEY: Object to form.  
 18 A I don't know what you mean by from the  
 19 beginning. I don't know that I would say from the  
 20 beginning of the experiment. But from our initial  
 21 presentation of the data, I would say yes.  
 22 Q Okay. And that initial presentation of the  
 23 data, that was sometime before the 2006 Heart Rhythm  
 24 Society when you actually presented the paper; is  
 25 that correct?



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<p style="text-align: right;">73</p> <p>1 A Yes. That's correct.</p> <p>2 Q And I know I asked you this last time, and I</p> <p>3 remember what your answer was, but can you remember</p> <p>4 anybody who was there?</p> <p>5 A At?</p> <p>6 Q At the meeting where you presented your data to</p> <p>7 the TASER people.</p> <p>8 A I knew some of the TASER executives were there.</p> <p>9 If you mentioned some of the names, I might recall,</p> <p>10 but I don't recall right now off the top of my head.</p> <p>11 Q Well, was Mark --</p> <p>12 A And I think Mark Kroll was there.</p> <p>13 Q So Mark Kroll was there; is that correct?</p> <p>14 And that was here at the Cleveland Clinic?</p> <p>15 A That's correct.</p> <p>16 Q And Rick Smith, the CEO of TASER.</p> <p>17 A Yes.</p> <p>18 Q He was there?</p> <p>19 A That sounds familiar. Yes.</p> <p>20 Q Was Steve Tuttle there?</p> <p>21 A I don't recall that.</p> <p>22 Q Tom Smith, his brother.</p> <p>23 A I don't recall whether -- one of the two Smiths</p> <p>24 were there, at least.</p> <p>25 Q And several things were read to you out of your</p>	<p style="text-align: right;">75</p> <p>1 MR. MALEY: I'm going to</p> <p>2 object to the form of the question.</p> <p>3 These areas were covered the last</p> <p>4 time the doctor was deposed.</p> <p>5 A Any sort of scarring in the heart muscle can</p> <p>6 potentially form a substrate.</p> <p>7 Q Would you include ARVC?</p> <p>8 MR. MALEY: Objection to the</p> <p>9 form of the question. Calls for</p> <p>10 expert opinion not covered within</p> <p>11 the material.</p> <p>12 A Yes. ARVC creates scarring in the myocardium.</p> <p>13 Q And so people are walking around and they don't</p> <p>14 even know -- and they don't show any visible symptoms</p> <p>15 of a heart defect, but they have different heart</p> <p>16 defects including some might have ARVC; is that</p> <p>17 correct?</p> <p>18 A I assume that that's -- there are people walking</p> <p>19 around like that.</p> <p>20 Q And so what you're saying here is that if you</p> <p>21 shoot somebody so a dart lands in the region of the</p> <p>22 left nipple and the person has ARVC, they might be at</p> <p>23 higher risk of having a cardiac arrest.</p> <p>24 MR. MALEY: Objection to the</p> <p>25 form. Leading.</p>
<p style="text-align: right;">74</p> <p>1 articles, but one thing that was not read to you was</p> <p>2 the following: "Our data regarding myocardial</p> <p>3 capture, however, suggests that potential for</p> <p>4 induction of ventricular tachycardia in subjects with</p> <p>5 substrate for ventricular tachycardia especially if</p> <p>6 one of the electrodes were to come within a few</p> <p>7 centimeters of the myocardium with the other position</p> <p>8 to direct the current toward the heart. In humans,</p> <p>9 the anterior apical right ventricular myocardium is</p> <p>10 closest to the chest wall. Positioning of an</p> <p>11 electrode in a small thin human in the region of the</p> <p>12 left nipple with the other electrode near the sternal</p> <p>13 notch may simulate our position A and could</p> <p>14 potentially achieve comparable proximity to the</p> <p>15 electrodes to the heart. Avoidance of this position</p> <p>16 would greatly reduce any concerns for induction of</p> <p>17 ventricular arrhythmias."</p> <p>18 Do you recall publishing that in your paper that</p> <p>19 was accepted for publication on March 20th, 2006?</p> <p>20 A Well, I don't recall the exact wording, but I</p> <p>21 assume if you're reading from it, that's an accurate</p> <p>22 description of what we said back at that time.</p> <p>23 Q Okay. And can you explain what you mean by a</p> <p>24 substrate for ventricular tachycardia?</p> <p>25 A Any sort of --</p>	<p style="text-align: right;">76</p> <p>1 MS. DIFRANCO: Do you need to</p> <p>2 see the article that he's referring</p> <p>3 to? No? Okay.</p> <p>4 A Yes. What we said was that there's the</p> <p>5 potential for cardiac capture at a rapid rate, and if</p> <p>6 they -- if the person has some substrate that would</p> <p>7 make them susceptible to these rapid ventricular</p> <p>8 arrhythmias, then they're at higher risk for</p> <p>9 developing such a thing during the application of the</p> <p>10 TASER.</p> <p>11 Q And that would include -- when you say</p> <p>12 "developing such a thing," you mean cardiac arrest,</p> <p>13 correct?</p> <p>14 A Yes. That would include cardiac arrest, yes.</p> <p>15 Q And when you say a substrate, you're including</p> <p>16 conditions like ARVC, correct?</p> <p>17 A Yes.</p> <p>18 Q And anybody who, let's say, has fatty</p> <p>19 infiltrates or fibrosis or other abnormalities in</p> <p>20 some of the tissues in the myocardium?</p> <p>21 A Scarring specifically.</p> <p>22 Q Now, so that's -- since -- a police officer</p> <p>23 who's looking at a person wouldn't know whether they</p> <p>24 had this condition or not, correct?</p> <p>25 A That's correct.</p>

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1 MR. MALEY: Object to the  
2 form of the question.

3 Q Were you trying --

4 A Most likely not.

5 Q So were you trying to suggest here that maybe it  
6 would be better not to aim the darts at the heart?

7 MR. MALEY: Object to form.

8 A If they had a choice, I would say that that  
9 would certainly be something that seems reasonable.

10 Q And that's what you were trying to communicate  
11 when you published this article, correct?

12 MR. MALEY: Object to form.

13 Leading.

14 A I don't know that I was trying to communicate a  
15 particular recommendation at the time, but I was just  
16 pointing out a particular vulnerability.

17 Q And did you point out this same vulnerability  
18 when you met with the TASER executives?

19 A I brought up the fact that there was rapid  
20 capture and that there is a potential there for  
21 causing arrhythmias.

22 Q And arrhythmias, do we mean cardiac arrest,  
23 among other things?

24 A Cardiac arrest is generally caused by a form of  
25 cardiac arrhythmias.

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1 Q Okay. Was some of that data --

2 A He did not physically help me type any of this  
3 presentation, if that's what you mean.

4 Q Okay. But did he give you data like the fact --  
5 that one I objected to earlier, the fact that officer  
6 injuries and suspect injuries have gone down as a  
7 result of TASER use?

8 A I can't say that I recall specifically what  
9 references he suggested for me, but I know that he  
10 did send a bunch of references and say look at these  
11 as part of your preparation.

12 Q And after the presentation -- before the  
13 presentation -- now, this presentation was given on  
14 May 15th, 2009, correct?

15 A Yes.

16 Q Okay. Did Dr. Kroll tell you that on April 10th  
17 of 2009 there was a boy who had just barely turned 16  
18 years old who had been struck in the region of the  
19 left nipple with an X-26 dart, had immediately  
20 collapsed, was found to be pulseless by the officers  
21 as soon as a half minute after his collapse, and then  
22 was found to be in ventricular fibrillation by the  
23 paramedics when they arrived?

24 A I don't recall Dr. Kroll telling me about such a  
25 case.

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1 Q Thank you.

2 Now, let's talk about this debate you did in  
3 2009 with Dr. Zipes.

4 A Yes.

5 Q Does that sort of stick out in your mind?

6 A Well, it's not too far away that I can recall  
7 more of this than older ones.

8 Q Do you remember there was kind of a big audience  
9 for that?

10 A There was a reasonable size audience, yes.

11 Q Many of your colleagues from the  
12 electrophysiology community were there; is that  
13 correct?

14 A Probably all the people attending that  
15 particular conference is from the electrophysiology  
16 community.

17 Q And I've heard estimates that the crowd was over  
18 100 for this particular --

19 A I would say that's reasonable.

20 Q And are you telling me in this deposition that  
21 Dr. Kroll did not assist you in preparing the data  
22 for the Power Point, that you did all that yourself?

23 A I'm sorry. I did -- I made the Power Point  
24 myself. Dr. Kroll did help with suggesting certain  
25 data that I should look at.

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1 Q And then on autopsy the toxicology showed  
2 nothing but some marijuana and nicotine in his  
3 system.

4 A I don't recall any such conversation.

5 Q Have you ever heard of a case like that?

6 A I can't say that I've heard of this particular  
7 case, but, you know, I've heard through the news  
8 media of various people dying from -- after TASER  
9 applications.

10 Q Well, does that sound -- just based on my  
11 description, which is very partial, does that sound  
12 like a case that might fit within the criteria that  
13 you and Dr. Swerdlow had developed for TASER caused  
14 VF?

15 A It certainly sounds like a possible cause of the  
16 sudden death.

17 Q And would you have appreciated somebody if  
18 they -- let's just assume Dr. Kroll knew about this  
19 case, and I'm not just making that up. TASER  
20 International was called the day it happened. It was  
21 April 10, 2009.

22 Do you think, you know, since you were going to  
23 get up in front of your colleagues and defend this  
24 position about the cardiac safety of the device, that  
25 it would have been nice to know that a case like this



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81	<p>1 had happened recently?</p> <p>2 <b>MR. MALEY:</b> Object to the</p> <p>3 form of the question. Assumes facts</p> <p>4 not in evidence.</p> <p>5 A I'm not sure if it was directly relevant to the</p> <p>6 particular presentation, but, you know, I did not</p> <p>7 hear from him at that time, and it would be --</p> <p>8 Dr. Kroll already knew that I wasn't defending that</p> <p>9 TASER can never cause arrhythmias, so I don't know</p> <p>10 that that was an issue.</p> <p>11 Q So he was sending you other information in the</p> <p>12 run up to this presentation you gave, but he didn't</p> <p>13 include that information. Would that be correct?</p> <p>14 <b>MR. MALEY:</b> Object to form.</p> <p>15 A Yes. He did not send me that, but -- he did not</p> <p>16 mention that particular case to me at all.</p> <p>17 Q But he was sending you --</p> <p>18 A That I recall, anyway.</p> <p>19 Q But he was sending you other information and</p> <p>20 saying you might want to include this in your</p> <p>21 debate.</p> <p>22 A Might want to -- yeah. Might want to review</p> <p>23 these issues.</p> <p>24 Q Okay. And so your position is not that a TASER</p> <p>25 cannot cause VF in a human being if the darts are in</p>	83	<p>1 A Based on the experiments we did, it would be</p> <p>2 highly unlikely to have any directly induced</p> <p>3 arrhythmias from a TASER dart to the back or other</p> <p>4 parts of the body other than near the heart.</p> <p>5 Q And that -- now, you -- I took your deposition</p> <p>6 here on July 12th, 2012. Since that time have you</p> <p>7 done anything in regards to TASERs or electrical</p> <p>8 control devices other than sit for your deposition</p> <p>9 today?</p> <p>10 A No.</p> <p>11 Q Okay. Now, Mr. Maley marked as Exhibit 6 -- and</p> <p>12 maybe you have it. And I'd like to spend the rest of</p> <p>13 my time on a few of the slides on this.</p> <p>14 A Sure.</p> <p>15 Q This is Exhibit 6, and it's a presentation you</p> <p>16 gave and, actually, I had found this on the Internet.</p> <p>17 A Is that right? At the site of the -- is this</p> <p>18 the Kansas City --</p> <p>19 Q Is that what the UK means --</p> <p>20 A Yeah.</p> <p>21 Q -- University of Kansas?</p> <p>22 A Yes.</p> <p>23 Q I thought it was in Britain. I'm thinking you</p> <p>24 went over -- okay.</p> <p>25 So this refreshes your recollection that it was</p>
82	<p>1 the chest, correct?</p> <p>2 A Yes. That was my position in the debate.</p> <p>3 Q I think I've got too many double negatives in</p> <p>4 there.</p> <p>5 Is your position that it is possible for a TASER</p> <p>6 to cause VF in a human being?</p> <p>7 <b>MR. MALEY:</b> Object to the</p> <p>8 form of the question. Beyond the</p> <p>9 scope of the deposition. Previously</p> <p>10 addressed in the prior deposition</p> <p>11 testimony.</p> <p>12 A So my position was that it is possible.</p> <p>13 Q And according to your theory of how that can</p> <p>14 happen, is it possible only if at least one dart</p> <p>15 lands in the region of the heart?</p> <p>16 A In the region of the chest close to the heart.</p> <p>17 Q So under your theory of how this can happen as a</p> <p>18 possibility, that can be eliminated as a possibility</p> <p>19 if the darts land, let's say, in the back or in the</p> <p>20 lower torso or in the abdomen. Would that be</p> <p>21 correct?</p> <p>22 <b>MR. MALEY:</b> Object to form.</p> <p>23 This is not a retained expert by the</p> <p>24 defendants. It is not disclosed as</p> <p>25 such.</p>	84	<p>1 the University of Kansas?</p> <p>2 A Yes. I did a presentation at the University of</p> <p>3 Kansas.</p> <p>4 Q And so that would be where your ex -- let's say</p> <p>5 your ex-protege and very successful former fellow</p> <p>6 Dr. Lakkireddy is presently.</p> <p>7 A Yes.</p> <p>8 Q Did he have something to do with inviting you</p> <p>9 there?</p> <p>10 A Yes, he did.</p> <p>11 Q And so do you know whether you did this before</p> <p>12 or after I took your deposition?</p> <p>13 A I don't recall. I think it's probably well</p> <p>14 before, but I'm not sure.</p> <p>15 Q Okay.</p> <p>16 A I think it's been over two years that I've been,</p> <p>17 so --</p> <p>18 Q Well, one thing that's cited in here is</p> <p>19 Dr. Zipes's study --</p> <p>20 A Yes.</p> <p>21 Q -- from Circulation, which I think came out in,</p> <p>22 if I'm not losing my years here, is May of 2012.</p> <p>23 A Okay.</p> <p>24 Q So --</p> <p>25 A Then it must have been.</p>

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<p style="text-align: right;">89</p> <p>1 A "TASERs deliver electrical pulses. If these</p> <p>2 pulses were able to pace the heart at a rapid rate,</p> <p>3 then arrhythmia induction is a possibility."</p> <p>4 Q And is this what you believed to be true?</p> <p>5 A Yes.</p> <p>6 Q And in your test animals in 2005 you were</p> <p>7 getting -- were you getting the heart paced at a</p> <p>8 rapid rate at standard?</p> <p>9 A In some instances.</p> <p>10 Q Depending on the dart position?</p> <p>11 A And depending on the pig.</p> <p>12 Q And the very fact that the TASER was causing the</p> <p>13 heart to be paced at a rapid rate, that raised the</p> <p>14 possibility of cardiac arrest. Would that be</p> <p>15 correct?</p> <p>16 A There was -- I had a concern that a rapid pacing</p> <p>17 of the heart can potentially generate heart</p> <p>18 arrhythmias.</p> <p>19 Q And that's based on, let's say, principles of</p> <p>20 electrophysiology as you understand them?</p> <p>21 A That's correct.</p> <p>22 Q Now, if you could go to the next one, I don't</p> <p>23 have an extra, but it's 11, and I'd like to hold it</p> <p>24 up just on video just so we can see what it is. Can</p> <p>25 I hold it out here? Maybe if you could just explain</p>	<p style="text-align: right;">91</p> <p>1 A With that position one that we tested in the</p> <p>2 pigs from the sternal notch to the point of maximum</p> <p>3 impulse, the initial testing was done with the two</p> <p>4 barbs that way and so we wanted to know whether there</p> <p>5 was an influence in the barbs separation along that</p> <p>6 line on capture of the heart. That is what this</p> <p>7 particular slide indicates.</p> <p>8 Q Then 31, is that a bar graph showing the</p> <p>9 results?</p> <p>10 A That's correct.</p> <p>11 MR. BURTON: And I'd like to</p> <p>12 mark this -- this can be marked</p> <p>13 6-31.</p> <p>14 -----</p> <p>15 (Plaintiff's Exhibit 6-31 was</p> <p>16 marked for identification.)</p> <p>17 -----</p> <p>18 BY MR. BURTON:</p> <p>19 Q So which dart is moving, the upper dart or the</p> <p>20 lower dart as you're gesturing there?</p> <p>21 A The chart indicates two different movements, so</p> <p>22 one is -- the purple is indicating moving the dart</p> <p>23 from the PMI up towards the sternal notch, and the</p> <p>24 maroon color is indicating moving the upper dart</p> <p>25 towards the PMI.</p>
<p style="text-align: right;">90</p> <p>1 this.</p> <p>2 A Are you asking me the question?</p> <p>3 Q Yes.</p> <p>4 A This is a graph showing the standard pacing</p> <p>5 output that a typical pacemaker would put out and its</p> <p>6 relationship to capture the heart with a pacing</p> <p>7 impulse.</p> <p>8 Q And how does it relate to what you're expressing</p> <p>9 here?</p> <p>10 A Well, I was presenting this presentation to an</p> <p>11 audience that may not be all familiar with these</p> <p>12 basic principles of cardiac pacing, so I was</p> <p>13 explaining what cardiac pacing capture is and what is</p> <p>14 necessary to capture the heart and that because I was</p> <p>15 going to start talking about electrical impulses from</p> <p>16 the TASER, I wanted to have some background</p> <p>17 information for the audience to understand that</p> <p>18 these -- what is the relationship between current and</p> <p>19 pulse width and so on.</p> <p>20 Q I'd like to invite your attention now to slide</p> <p>21 number 30.</p> <p>22 A Okay. 30. Okay.</p> <p>23 Q Okay. And can you just -- without reading it,</p> <p>24 just describe what it is that you're saying here in</p> <p>25 just summary?</p>	<p style="text-align: right;">92</p> <p>1 Q And in both cases, if I'm reading this right,</p> <p>2 between 7 and a half centimeters and 15 centimeters</p> <p>3 separation between the electrodes, you got cardiac</p> <p>4 capture every time?</p> <p>5 A That's correct. There was some -- some cardiac</p> <p>6 capture occurred every time when you have those kinds</p> <p>7 of separations.</p> <p>8 Q In fact, if you look at 32, which are your</p> <p>9 conclusions -- and I'm sorry, I don't have a</p> <p>10 separation -- could you read your first conclusion</p> <p>11 there, please, on page --</p> <p>12 A "While VF is not induced at standard outputs</p> <p>13 from the TASER, our findings were in contrast to the</p> <p>14 prior study in pigs which showed an over 15x safety</p> <p>15 margin for the induction of VF."</p> <p>16 Q And so the prior study that you're referring to</p> <p>17 was the one that you testified earlier that was in</p> <p>18 pace that was done by -- I think it was called the</p> <p>19 McDaniels study?</p> <p>20 A That's correct.</p> <p>21 Q And they found 15 times safety margin, but you</p> <p>22 found as low as a three times safety margin; is that</p> <p>23 correct?</p> <p>24 A That's correct.</p> <p>25 Q And then can you read your third bullet point</p>



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<p style="text-align: right;">93</p> <p>1 there, please?</p> <p>2 A "Location of the dart on the chest and its</p> <p>3 electrical proximity to the heart plays an important</p> <p>4 role in whether the TASER pulse has captured the"</p> <p>5 heart, I think.</p> <p>6 Q Yeah. I think you meant heart.</p> <p>7 A Missed it. Yeah.</p> <p>8 Q And so is that something that you believe to be</p> <p>9 true since you've done the pig experiments?</p> <p>10 A Yes.</p> <p>11 Q And that's something that you shared with TASER</p> <p>12 prior to publication of your papers?</p> <p>13 A Yes.</p> <p>14 Q And can you read your last bullet point there?</p> <p>15 A "Of significant concern, rapid capture was very</p> <p>16 common at standard output of the TASER at rates we</p> <p>17 commonly associate with potential induction of VF."</p> <p>18 Q Can you explain -- let's say you're explaining</p> <p>19 this to a non-medical audience -- exactly what you're</p> <p>20 saying there?</p> <p>21 A Well, when you pace the heart at, say, rates</p> <p>22 above 200 beats per minute or 250 to 300 beats per</p> <p>23 minute, you have the potential of inducing</p> <p>24 ventricular fibrillation.</p> <p>25 Q And that's what you were getting with the</p>	<p style="text-align: right;">95</p> <p>1 Q And neither of you apparently knew what the</p> <p>2 other was doing.</p> <p>3 A Correct.</p> <p>4 Q Okay. And are you critical of their study or</p> <p>5 their methodology or their conclusions?</p> <p>6 A No. I don't think so.</p> <p>7 Q Do you think as a doctor and as a scientist that</p> <p>8 we can look at your study and their study together</p> <p>9 and understand better the medicine and the physiology</p> <p>10 of this?</p> <p>11 A I think their study contributed to some extent</p> <p>12 to our understanding, yes.</p> <p>13 Q And there's nothing that is contradictory</p> <p>14 between your study their study. Would you agree with</p> <p>15 that?</p> <p>16 A Yeah. I don't think they're necessarily</p> <p>17 contradictory.</p> <p>18 Q I mean, you did five second discharges, they did</p> <p>19 longer discharges. You had a scalable device where</p> <p>20 you could increase the power, they used only standard</p> <p>21 devices. They used epinephrine on some pigs, you</p> <p>22 didn't. And then we have a variety of findings,</p> <p>23 correct?</p> <p>24 A That's correct.</p> <p>25 Q Okay. And then would you say, without going</p>
<p style="text-align: right;">94</p> <p>1 standard output of the TASER when it was --</p> <p>2 A In some cases. Certainly not in all the cases.</p> <p>3 Q But the one constant that your experiments were</p> <p>4 showing -- is it correct, Doctor? -- is that this</p> <p>5 happens when the darts are near the heart and when</p> <p>6 they're away from the heart on another part of the</p> <p>7 anatomy it doesn't happen?</p> <p>8 A That's correct.</p> <p>9 Q And, again, this is something that you were</p> <p>10 sharing with TASER?</p> <p>11 A Yes. I believe we shared that the proximity to</p> <p>12 the heart was an important variable in capture.</p> <p>13 Q And that would be prior to the Heart Rhythm</p> <p>14 Society meeting in 2006 when you formally presented</p> <p>15 your paper?</p> <p>16 A That's correct.</p> <p>17 Q Now, then if you go to 33, you mentioned should</p> <p>18 the studies be done in humans instead of pigs. And</p> <p>19 you would like to have some human data on this; is</p> <p>20 that correct?</p> <p>21 A That would be nice.</p> <p>22 Q And then you mention in 34 and 35 the</p> <p>23 Nanthakumar study which coincidentally was released</p> <p>24 virtually simultaneously with yours, correct?</p> <p>25 A Yes.</p>	<p style="text-align: right;">96</p> <p>1 through any more, the same thing about the Walters</p> <p>2 study that you referred to on 36 and 37?</p> <p>3 A Yeah.</p> <p>4 Q Okay. We don't need to -- now, I'd like to jump</p> <p>5 to page 55. I'm sorry. Let me go to page 53, and</p> <p>6 this is where you cite Dr. Zipes's article.</p> <p>7 A Yes.</p> <p>8 Q Okay. And this is another way to -- you have</p> <p>9 great respect for Dr. Zipes; is that correct?</p> <p>10 A I do.</p> <p>11 Q And did you have any concerns or questions about</p> <p>12 his study or his methodology which was obviously</p> <p>13 totally different than yours?</p> <p>14 A I don't recall the details already of this. I</p> <p>15 haven't reviewed this paper recently, but I don't</p> <p>16 recall any strong objections to the case reports that</p> <p>17 he had mentioned, that he brought in.</p> <p>18 Q This is in your Power Point slides. You're</p> <p>19 presenting it, let's say, not critically, but</p> <p>20 uncritically as something that's adding to our</p> <p>21 knowledge in this area?</p> <p>22 A Yes. Correct.</p> <p>23 Q Okay. And just for your information,</p> <p>24 Mr. Mitchell is one of the cases here, he's case</p> <p>25 number 7, and that's the case that we are here on</p>

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97	<p>1 today, the one I was mentioning, and he actually</p> <p>2 weighed 128 pounds. Were you more concerned that</p> <p>3 this could happen to a thin human being, that there</p> <p>4 would be capture that might lead to an arrhythmia?</p> <p>5 <b>MR. MALEY:</b> Objection to the</p> <p>6 form of the question. To the extent</p> <p>7 it implies that he was a thin human</p> <p>8 being, contrary to the evidence in</p> <p>9 the record.</p> <p>10 A Well, the thinner a person, obviously closer the</p> <p>11 heart is to the chest and chest wall, so yes, there</p> <p>12 is more concern with thin people than there is with</p> <p>13 some obese people.</p> <p>14 Q And would you consider somebody who is 5,3 and</p> <p>15 128 pounds to be thin?</p> <p>16 A I don't know how to answer that.</p> <p>17 Q Okay.</p> <p>18 A He's probably at his ideal weight.</p> <p>19 Q Everybody else is fat, right?</p> <p>20 Okay. So 54 you talk about what is the</p> <p>21 denominator. So I assume that by what is the</p> <p>22 numerator, the number of people that this has</p> <p>23 happened to, that has had cardiac arrest due to</p> <p>24 cardiac capture due to darts in the chest, and the</p> <p>25 denominator you're suggesting here is what is the</p>	99	<p>1 Q So do you have a reliable number on what that</p> <p>2 numerator is?</p> <p>3 A I don't think we have a reliable number, but it</p> <p>4 would be from -- the best we can gather from police</p> <p>5 reports and so on.</p> <p>6 Q And media reports and --</p> <p>7 A Yes.</p> <p>8 Q -- Google alerts and everything?</p> <p>9 A Sure.</p> <p>10 Q Okay. So -- and then -- so if we looked at just</p> <p>11 the numerator as the number of people that this</p> <p>12 happened to and the denominator as the number of</p> <p>13 people who were hit in the chest with darts, that</p> <p>14 would be different than what you're saying here,</p> <p>15 correct?</p> <p>16 A Yes.</p> <p>17 Q Because the denominator here on 54 is including</p> <p>18 people hit in the back and alligator clips during</p> <p>19 training and all of that.</p> <p>20 A I don't know about alligator clips during</p> <p>21 training, but yes, this would include all hits.</p> <p>22 Q Okay. Now, 55 --</p> <p>23 <b>MR. BURTON:</b> And I'll have</p> <p>24 this marked as 6-55.</p> <p>25 -----</p>
98	<p>1 total number of people who have been tazed.</p> <p>2 A Yes.</p> <p>3 Q Okay. But is there a national registry that we</p> <p>4 can go to to get this data?</p> <p>5 A Unfortunately not. I don't think there's a</p> <p>6 national registry.</p> <p>7 Q It would be good if there was, correct?</p> <p>8 A I think it would be.</p> <p>9 Q And so we're relying here on figures that are</p> <p>10 maybe from the manufacturer based on sales of darts</p> <p>11 or something?</p> <p>12 A I don't know what the data that was used, but</p> <p>13 they do have data and tips of usage of the device.</p> <p>14 Q Well, where did you get this data that's on 54?</p> <p>15 A I think this is from the manufacturer.</p> <p>16 Q Is this from Dr. Kroll?</p> <p>17 A I'm not sure if it was directly from Dr. Kroll</p> <p>18 or not, but I think it is from -- these are TASER</p> <p>19 data.</p> <p>20 Q Okay. And the numerator would be the number of</p> <p>21 people who die or at least have cardiac arrest --</p> <p>22 because it's possible to be resuscitated, correct?</p> <p>23 A Yes.</p> <p>24 Q Okay. And -- after TASER darts to the chest?</p> <p>25 A That's correct.</p>	100	<p>1 (Plaintiff's Exhibit 6-55 was</p> <p>2 marked for identification.)</p> <p>3 -----</p> <p>4 <b>BY MR. BURTON:</b></p> <p>5 Q Here you're answering a rhetorical question,</p> <p>6 Doctor; is that correct?</p> <p>7 A That's correct.</p> <p>8 Q Why are these sudden deaths so infrequent?</p> <p>9 A Yes.</p> <p>10 Q And could you read what number two is?</p> <p>11 A "There are relatively small areas of the chest</p> <p>12 where a dart hit can potentially generate high enough</p> <p>13 current density at the myocardial surface to generate</p> <p>14 rapid capture."</p> <p>15 Q And you've known that to be true since you did</p> <p>16 your animal experiments in 2005; is that correct?</p> <p>17 A I think that from the data from the animal</p> <p>18 experiments led me to suspect that there's some area</p> <p>19 around the chest that this can occur, and the data</p> <p>20 from the CT study indicates to me that that's a</p> <p>21 relatively small area where that would be in humans</p> <p>22 in terms of distances.</p> <p>23 Q And so could you just with your finger, because</p> <p>24 you're on video here, just illustrate for us a couple</p> <p>25 times so it's real clear to somebody who looks at the</p>